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Linking Magazine Exposure to Social Appearance Anxiety: The Role of Appearance Norms
in Early Adolescence

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Abstract

Early adolescents ($N = 1,591$; $M_{age} = 11.698$; $SD = .892$) participated in a two-wave panel study (6-month interval) to examine the longitudinal association between appearance-focused magazine exposure and social appearance anxiety. We revealed that magazine exposure positively correlated with the internalization of appearance ideals and the attribution of social rewards to attractiveness which, in turn, related to social appearance anxiety. Internalization and attribution of social rewards formed a reinforcing spiral; once internalized, early adolescents associate positive things to appearance ideals (e.g., peer acceptance) and the perception of rewards increases early adolescent's inclination to internalize ideals. Given the adverse consequences of social appearance anxiety, the findings warrant research on the role of media in the occurrence of social appearance anxiety.

Keywords: early adolescence, magazines, social appearance anxiety, internalization, social rewards

Linking Magazine Exposure to Social Appearance Anxiety: The Role of Appearance Norms in Early Adolescence

Belonging to a peer group and gaining popularity become important benchmarks in early adolescents' identity development (Brinthaupt & Lipka, 2002). To gain a sense of who they are and where they stand in their social group, early adolescents rely on information sources such as the media (Arnett, 1995). However, the media – such as magazines – are replete with unrealistic appearance ideals (e.g., Frith, Shaw, & Cheng, 2005), and send the message that peer acceptance can be achieved through attractiveness by associating the ideal appearance with social rewards (Northup & Liebler, 2010). When such messages are internalized, boys and girls might begin to worry that their own appearance does not comply to these standards and fear being negatively evaluated for their appearance, which researchers coined social appearance anxiety (Hart et al., 2008). Such concerns have been shown to negatively affect self-image and overall well-being (Levinson & Rodebaugh, 2011).

The primary objective of this two-wave panel study is to elaborate the influence of exposure to appearance-focused magazines on social appearance anxiety, as research has shown that magazines are actively sought out by boys and girls because they contain important information about appearance-related topics, which can be implemented on their own physical appearance (Levine, Smolak, & Hayden, 1994). It therefore differentiates from more entertainment-oriented media experiences such as television viewing in which appearance ideals are encountered rather coincidentally. This assumption resonates with prior research that has related magazine exposure more consistently with body dissatisfaction than television viewing (Harrison & Cantor, 1997). Moreover, magazines targeted at young women regularly show that the ideal appearances of celebrities can be emulated through clothing, make-up, and beauty products (Duke, 2002). Therefore, early adolescents not only encounter a mere visual image of media figures who comply with the prevailing beauty

standards, but are confronted with media messages aimed to convince them that anyone can and should become attractive (Burkley et al., 2014). Although ample literature exists on the influence of appearance-focused magazines on people's body image (e.g., Slater & Tiggemann, 2014) and body dissatisfaction (e.g., Clark & Tiggemann, 2006; Tiggemann, Slater, Bury, Hawkins, & Firth, 2013), few studies investigated the association between magazine exposure and social appearance anxiety. The current study therefore contributes to literature by attending specifically to the construct of social appearance anxiety. A third contribution of the current study is the examination of two explanatory mechanisms underlying the studied relation. In particular, it is investigated whether and how the internalization of appearance ideals and the social rewards for attractiveness might explain how exposure to appearance magazines affects early adolescents' social appearance anxiety. Lastly, the current study focuses on early adolescents as they become increasingly concerned with peer evaluations (Harter, 2000), are characterized by heightened self-consciousness (Elkind, 1979), and face many physical changes that affect their self-worth (Kroger, 2007).

Magazine Exposure and Social Appearance Anxiety

Social appearance anxiety is an important construct to investigate given its unique association with disordered eating (Levinson et al., 2013). Furthermore, social appearance anxiety has also been shown to lead to state body dissatisfaction (Levinson & Rodebaugh, 2015) and mediates the effect of exposure to "beauty-is-malleable" messages on interest in plastic surgery (Burkley et al., 2014). By considering social appearance anxiety as a measure of body image, the current study corroborates Gleeson and Frith's (2006) argument that the perception of one's body is inherently social and that body image research should consider the complexity of the ways in which people perceive and evaluate their bodies in different (imagined) contexts, such as a context in which one is judged based on their appearance.

Given their ubiquitousness, the mass media have been suggested to be among the

strongest communicators of appearance ideals (e.g., Tiggemann, 2011). Magazines in particular add to the construction of appearance ideals as they, to attract readers, deliberately select models that are very attractive (Frith et al., 2005). For instance, Yan and Bissell (2014) showed that the cover of the top four fashion magazines (Vogue, Elle, Glamour, and Cosmopolitan) typically features (a) models who are in clear accordance with the prevailing appearance ideals and (b) stories about how this ideal appearance can be emulated by the readers. It is often concluded that magazines focus on external beauty “over and above internal beauty” (p. 201) with most female models being highly feminine, sexual, and thin (Yan & Bissell, 2014) and male models being characterized by their highly muscular physique (Leit, Pope, & Gray, 2001).

In addition to stories covering appearance-related topics, magazines are replete with advertisements that use attractive models to sell products. Such ads present readers with examples of how a woman and man should look like and how the ideal appearance can be achieved (Cortese, 2007). Content analyses have shown that magazines contain a disproportionate amount of content that focuses on appearance (Willis & Knobloch-Westerwick, 2014) and emphasize the benefits from engaging in appearance-related behaviors (Labre, 2005). Malkin, Wornian, and Chrisler (1999) concluded that magazine articles often send the message that altering one’s body to meet the ideal standards of appearance would lead to a better life by combining appearance-related messages with catchy phrases such as “Ways to Make Your Life Easier, Happier, and Better.” In addition, attractive female models often epitomize the rewards (e.g., romantic success) men might obtain from using the advertised product (Conley & Ramsey, 2011). These messages might teach boys and girls about the existence of appearance ideals, the importance of complying with these ideals, and the rewards/punishments that may follow from this compliance/non-compliance.

Adolescents become increasingly motivated to achieve positive outcomes (e.g.,

Cauffman et al., 2010), and are therefore keen learners of what others expect them to be or do (Finkenauer, Engels, Meeus, & Oosterwegel, 2002). However, according to self-discrepancy theory (Higgins et al., 1987), the appraisal that one is incapable to meet a certain expected standard (or ideal-self) can induce emotional distress, such as anxiety (Veale, Kinderman, Riley, & Lambrou, 2003). Encountering the message that there are ideal standards of attractiveness can cause adolescents to fear that they do not comply and become anxious about negative judgements because of their appearance.

The investigation of media exposure as a predictor of social appearance anxiety has been rather limited. One experimental study by Monro and Huon (2005) found that young women who were shown advertisements featuring idealized images reported higher appearance anxiety than those who viewed non-idealized images. Comparable results were found by Halliwell and Dittmar (2004) among adult women. Although prior studies have indicated that early adolescents are already at risk of experiencing social appearance anxiety (e.g., Sahin, Barut, Ersanli, & Kumcagiz, 2014), studies examining the (longitudinal) influence of media exposure on social appearance anxiety among this age group are lacking.

Social Cognitive Theory

To better understand the influence of media exposure on body image disturbances, scholars have put forth the internalization of appearance ideals as an explanatory mechanism. The internalization of appearance ideals refers to the degree to which socially defined ideals of attractiveness are accepted as personal standards (e.g., Thompson & Stice, 2001). Watching television as well as reading magazines have been associated with the internalization of appearance ideals (Vandenbosch & Eggermont, 2012). However, according to Evans (2003), merely the image of a role model complying to an appearance ideal might not be enough to explain why (mostly) women are motivated to emulate the ideal. It is argued that ideals are internalized because of the expected benefits that are associated with fitting the

ideal mold (Engeln-Maddox, 2006). When examining the internalization of appearance ideals as an explanatory mechanism for the relationship between media use and body image constructs, it thus seems warranted to also include the social rewards for attractiveness. We address this gap in the literature by examining whether the attribution of social rewards to attractiveness underlies the relationship between exposure to appearance-focused magazines and early adolescents' internalization of appearance ideals.

In order for the attribution of social rewards to attractiveness to function as a mediator, it must be related to both appearance magazine exposure and the internalization of appearance ideals. With regard to the first relation, prior studies have indicated that media reinforce the link between the ideal standards of attractiveness and social rewards (Park, Diraddo, & Calogero, 2009), by portraying those who are in accordance with prevailing appearance ideals as desirable (e.g., Northup & Liebler, 2010). No prior studies have examined the association between media exposure and the attribution of social rewards to attractiveness. Nevertheless, building on the tenets of social cognitive theory (Bandura, 2001), scholars have often assumed that the rewarding of media figures who comply with the prevailing appearance ideals might teach boys and girls how they may benefit from complying with those ideals themselves (e.g., Harrison, 2000). When the modelled behavior is followed by outcomes that are valued by the individual (e.g., social acceptance), he/she is more inclined to acquire a positive attitude and imitate the behavior. Therefore, we argue that ideal appearances are rewarded in the media and that this particular observation can explain why boys and girls accept contemporary appearance ideals as personal standards.

Subsequently, once appearance ideals from the media are incorporated as personal standards, individuals have been shown to be more anxious for situations in which they believe their appearance is evaluated (e.g., Dittmar & Howard, 2004). For instance, Halliwell and Dittmar (2004) exposed young women to advertisements featuring a thin model, an

average-size model, or no model. Their results showed that exposure to the thin model resulted in greater body-focused anxiety for those who internalized the ideal.

False Consensus Effect

Both mechanisms of attributing social rewards to attractiveness and internalizing appearance ideals may also be inversely related, for two reasons. First, according to the tripartite influence model of body image and eating disturbance (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999), the media (as well as peers and parents) affect individuals' internalization of appearance ideals which, in turn, leads to a schematic set of beliefs about the importance of an ideal appearance for overall success in life (Blowers, Loxton, Grady-Flessner, Occhipinti, & Dawe, 2003). For the current study this would mean that internalized appearance ideals may guide ideas and perceptions of how important attractiveness is for being socially accepted. Second, individuals are inclined to misperceive the attitudes of others (e.g., "attractiveness is important") as more similar to their own (Prinstein & Wang, 2005), which has been coined the "false consensus effect" (Ross, Greene, & House, 1977). We therefore argue that the internalization of appearance ideals might predict early adolescents' perception that others consider attractiveness as a prerequisite of accepting them in their social group (Park et al., 2009).

The association between attractiveness and social rewards might be especially important for early adolescents who are becoming increasingly sensitive to peer conformity (Sumter, Bokhorst, Steinberg, & Westenberg, 2009) and, to that end, grow more aware of the expectations of others (Erath, Flanagan, & Bierman, 2007). If they feel they are unable to meet others' appearance-related expectations, anxiety about this deviation from the norm could occur. Park et al. (2009) showed, for instance, that female college students who indicated to believe that their acceptance among peers is conditional on their attractiveness experienced more anxious expectations of appearance-based rejection. The perception that

attractiveness is an important condition for peer acceptance might thus be an important factor in understanding individuals' worries about their appearance.

Moderating factors

Previous findings reveal that older children are more vulnerable to the effects of media exposure on their body image (e.g., Anschutz, Spruijt-Metz, Van Strien, & Engels, 2011). At the age of 12, early adolescents are confronted with many challenges. First, pubertal changes impact early adolescents' body image by increasing awareness of their bodies and overall appearance (McCabe, Ricciardelli, & Finemore, 2002). Second, early adolescents become increasingly self-conscious and sensitive to public criticism. As they become more skilled in perspective taking, they grow more concerned of what others think of them and, at the same time, believe they are the focus of everyone else's attention (i.e., imaginary audience; Elkind, 1979). Third, access to appearance-focused media content is also likely to increase with age (Clark & Tiggemann, 2006). Notably, teen and fashion magazines disseminate appearance ideals (Labre & Walsh-Childers, 2003) and are increasingly popular among adolescents (Thomsen, Weber, & Brown, 2002). As such, we will examine whether age moderates the examined relations.

Further, we expect that the model would have a better fit among the girls, for two reasons. First, magazines, including magazines targeted at teens, teach young girls about the importance of an attractive appearance for women in our society (Labre & Walsh-Childers, 2003). The lesser prevalence of male as opposed to female appearance ideals in media content might explain why boys generally internalize appearance ideals to a lesser extent than girls (Vandenbosch & Eggermont, 2012). Second, due to pubertal changes, girls divert further away from the ideal outward appearance (Labre & Walsh-Childers, 2003), which might make them more vulnerable to becoming anxious about negative judgements because of their appearance. Overall, girls have been shown to be more concerned with their appearance,

more aware of appearance ideals, and are confronted more often with appearance-related messages than boys (e.g., Phares, Steinberg, & Thompspon, 2004).

Purpose and Hypotheses

The current study aims to explore whether appearance magazine exposure is related to early adolescents' social appearance anxiety, 6 months later (Hypothesis 1). Second, we aim to examine whether and how the attribution of social rewards to attractiveness and the internalization of appearance ideals underlie this association. Specifically, based on prior literature and social cognitive theory (Bandura, 2001), we hypothesize that magazine exposure is related to the attribution of social rewards to attractiveness which predicts the internalization of appearance ideals which, in turn, relates to social appearance anxiety (Hypothesis 2). However, based on the tripartite influence model of body image (Thompson et al., 1999) and the false consensus effect (Ross et al., 1977), it can also be argued that magazine exposure is related to the internalization of appearance ideals which predicts the attribution of social rewards to attractiveness which, in turn, relates to social appearance anxiety (Hypothesis 3). An additional aim is to examine which path best represents the process underlying the association between magazine exposure and social appearance anxiety (Research Question 1). Lastly, we expect that age and gender would moderate the examined paths. Specifically, we expect that the proposed model would have a better fit among the older than the younger early adolescents (Hypothesis 4). Additionally, we expect that the model would have a better fit among the girls (Hypothesis 5).

Method

A two-wave panel study using an interval of 6 months was conducted among 9 to 14-year-olds. In the fall of 2014, survey data were obtained from 39 schools from different parts of [country deleted] after active informed consent of the parents was obtained. Participants were told that the goal of the study was to investigate their everyday life and were guaranteed

that the questionnaire would be processed confidentially. A second questionnaire was administered in March 2015 in the schools that had participated in the first wave.

Respondents were asked to report on magazine exposure, the attribution of social rewards to attractiveness, the internalization of appearance ideals, and social appearance anxiety in both waves. Based on the demographic information that was provided, each respondent was assigned a unique code to ensure that any identifying data could be deleted. A total of 1,938 early adolescents completed the questionnaire at baseline, 1,591 early adolescents (807 boys and 784 girls) completed both questionnaires. The respondents were between 9 and 14 years with a mean age at baseline of 11.11 years ($SD = .89$); 93% were born in [country deleted].

In order to examine whether attrition would impact our results, we explored differences between early adolescents who participated in one wave ($N = 369$) and those who participated in all waves ($N = 1,591$) with regard to all relevant variables (at wave 1). First, a chi-square test showed that subjects who participated in one wave were significantly more likely to be boys than those who completed both waves, $\chi^2(1) = 15.34, p < .001$. Further, a MANOVA analysis using Pillai's Trace revealed that there were no statistically significant differences between the early adolescents who participated in one wave and those who participated in both waves, $V = .003, F(4, 1404) = 1.153, p = .33, np^2 = .003$, with regard to magazine exposure, social appearance anxiety, the internalization of appearance ideals, and social rewards for attractiveness. For the remainder of the analyses, the analysis sample consisted of participants with both waves of data.

Measures

Control variables. Participants completed questions about their gender (1=*boy* and 2=*girl*), age, and estimated their weight and height. The mean BMI was 17.05 kg/m² ($SD = 3.07$). Considering the rapid growth of the Internet as a popular media source for young people (Bair, Kelly, Serdar, & Mazzeo, 2012), and in order to examine the power of

magazines above and beyond the Internet, we controlled for participants' Facebook use and search for appearance-related information online by asking them to indicate how often they engaged in these activities (responses ranged from *Never* (=1) to *More than once a day* (=7)).

Social appearance anxiety. The Social Appearance Anxiety Scale (Hart et al., 2008) was used to measure the extent to which early adolescents feared negative evaluations by others because of their overall appearance. The original scale consists of 16 items. Based on factor loadings and the poor understanding of some of the items, we decided to use 14 items of the original scale. Respondents indicated their agreement with items such as "I feel nervous when having my picture taken" and "I get tense when it is obvious people are looking at me" on a 5-point scale ranging from *I totally disagree* (=1) to *I totally agree* (=5). In the current study, the SAAS had an alpha of .901.

The attribution of social rewards to attractiveness. To measure early adolescents' perception that peer acceptance is contingent on an attractive appearance, we followed Park et al.'s (2009) strategy of using Jones and Crawford's (2005) adapted version of the Appearance-Dependent Acceptance Scale (Oliver & Thelen, 1996). The items were then, in line with Park and colleagues' study, modified to focus more generally on an attractive appearance rather than a thin/muscular body. Examples of items were "If I had a more attractive appearance, I think that my friends and peers would pay more attention to me" and "If I had a better body, I think I would be more popular among my friends and peers." Respondents indicated their agreement on a 5-point scale ranging from *I totally disagree* (=1) to *I totally agree* (=5). The scale showed good reliability ($\alpha = .832$).

The internalization of appearance ideals. To measure the extent to which respondents internalized the ideals they encounter in the media, the Internalization subscale of the Sociocultural Attitudes towards Appearance Scale (Thompson, Berg, Roehrig, Guarda, & Heinberg, 2003) was used. Respondents indicated their agreement on a 5-point scale, ranging

from *I totally disagree* (=1) to *I totally agree* (=5) with five items, such as “I compare my body to the bodies of TV and movie stars” and “I would like my body to look like the people who are in the movies.” The scale showed good reliability ($\alpha = .881$).

Magazine exposure. Using a 5-point scale ranging from *Never* (=1) to *Almost every day* (=5), respondents indicated how often they read five different types of magazines (i.e., magazines for women, magazines for men, magazines for youth, sport magazines, and gossip magazines). Each type was given a rather broad name (e.g., magazines for youth), but examples of popular magazines were added to provide a reference point in order to make it easier for the respondents to estimate their exposure to the genres. All five magazine genres have in common their portrayal of images of models and famous people and focus on appearance. Magazines directed at women, such as *Elle*, and magazines directed at men, such as *P-magazine* (a local version of *Maxim*), have been shown to reinforce traditional gender roles (e.g., Aubrey & Taylor, 2009; Conley & Ramsey, 2011) and are replete with appearance ideals (e.g., Yan & Bissell, 2014). Magazines directed at youth and “gossip” magazines feature stories and images of famous people and celebrities who are in accordance with the prevailing appearance ideals. We included sports magazines as they have been shown to focus on the body and negatively influence body image as well (e.g., Harrison & Fredrickson, 2003). A first-order confirmatory factor analysis in AMOS confirmed the internal consistency of the measure of magazine exposure ($\chi^2(4) = 7.97, p < .001$, CFI = .970, RMSEA = .066). Means and standard deviations are displayed in Table 1.

Results

Descriptive statistics

Descriptive statistics are summarized in Table 1. It can be inferred that, at baseline, early adolescents reported a mean level of 2.15 ($SD = .71$) on the Social Appearance Anxiety scale. Zero-order correlations further indicated significant relationships among magazine exposure,

the internalization of appearance ideals, the attribution of social rewards to attractiveness, and social appearance anxiety (see Table 1). Magazine exposure (wave 1) was positively related to social appearance anxiety six months later, which confirms Hypothesis 1.

[TABLE 1 ABOUT HERE]

Hypotheses Testing

The hypotheses were tested with structural equation modeling (SEM) using the maximum likelihood method, in AMOS. We controlled for the baseline values of age, gender, BMI, Facebook use, and searching online appearance-related information by employing these variables as predictors for all of the hypothesized endogenous variables and by allowing covariances with all variables of wave 1. In addition, the prior value of social appearance anxiety was also entered as a control variable. Magazine exposure (wave 1) was employed as the predictor in the hypothesized model, but magazine exposure (wave 2) was also added to test the stability of the construct. Multiple imputation was performed as the bootstrapping method does not allow the sample to include missing values.

[FIGURE 1 ABOUT HERE]

The SEM model showed a good fit of the data (Figure 1). The model yielded a chi-square value of 4212.968 with 1298 degrees of freedom, $p < .001$, RMSEA = .038, CFI = .935; $\chi^2/df = 3.246$. The results indicated that 6.5% of the variance of the attribution of social rewards to attractiveness (wave 1) and 10.4% of the variance of internalization (wave 1) could be explained by magazine exposure; the total model explained 66.8% of the variance of social appearance anxiety. The autoregressive coefficients for magazine exposure ($\beta = .522$, $SE = .022$, $p < .001$), the internalization of appearance ideals ($\beta = .352$, $SE = .035$, $p < .001$), attribution of social rewards to attractiveness ($\beta = .572$, $SE = .034$, $p < .001$), and social appearance anxiety ($\beta = .327$, $SE = .042$, $p < .001$) were sizable, suggesting that the individual differences between respondents were stable.

To test hypotheses 2 and 3 (i.e., indirect paths between magazine exposure and social appearance anxiety through internalization and attribution of social rewards to attractiveness), user-defined estimands were created. These tests revealed that when early adolescents read magazines more frequently at wave 1, they were more likely to internalize appearance ideals (wave 1) which was, in turn, related to the attribution of social rewards to attractiveness at wave 2 and, ultimately, more social appearance anxiety (wave 2) ($\beta = .028$, $SE = .008$, 95%CI [.014 - .048], $p = .001$). Hypothesis 2 is therefore supported by our data. Hypothesis 3 postulated that higher magazine exposure (wave 1) predicts the attribution of social rewards to attractiveness (wave 1) which, in turn, leads to increased levels of internalization (wave 2) which predict more social appearance anxiety (wave 2) ($\beta = .003$, $SE = .001$, 95% CI [.001, .007], $p = .001$), and was also supported by our data.

Next, the chi-square difference test was used to evaluate the relative fit of each cross-lagged path and thus to answer research question 1. We compared the unconstrained model with the model in which the cross-lagged paths were constrained to be equal. This test revealed that the attribution of social rewards to attractiveness is a better predictor of the internalization of appearance ideals than vice versa ($\Delta\chi^2 = 7.589$, $p = .006$). Subsequent contrast-tests (Preacher & Hayes, 2008) showed that the relationship between magazine exposure (wave 1) and the attribution of social rewards to attractiveness (wave 2) through the internalization of appearance ideals (wave 1) significantly differed from the relationship between magazine exposure (wave 1) and the internalization of appearance ideals (wave 2) through the perception that attractiveness is rewarded (wave 2) ($\Delta\beta = -.073$, $p = .010$, 95% CI[-.147, -.022]).

The chi-square difference test further revealed that the attribution of social rewards to attractiveness was a significantly better predictor of social appearance anxiety than the internalization of appearance ideals ($\Delta\chi^2 = 54.542$, $p = .000$). Subsequent contrast-tests

showed that the indirect relationship between the internalization of appearance ideals (wave 1) and social appearance anxiety (wave 2) through the attribution of social rewards to attractiveness (wave 1) differed significantly from the indirect relationship between the attribution of social rewards to attractiveness (wave 1) and social appearance anxiety (wave 2) through internalization (wave 2) ($\Delta\beta = -.083, p = .002, 95\% \text{ CI}[-.139, -.038]$).

Control variables. With regard to the control variables, results showed that BMI was only significantly related to internalization (wave 2), $\beta = .062, SE = .003, p < .01$. Age was significantly related to internalization (wave 2), $\beta = .071, SE = .019, p < .01$, and the attribution of social rewards to attractiveness, $\beta = .062, SE = .032, p < .01$. Respondents' gender (girls represent highest score) was significantly related to internalization (wave 2), $\beta = .056, SE = .035, p < .05$, and social appearance anxiety, $\beta = .112, SE = .030, p < .001$. Online searching for appearance-related information and Facebook use were only significantly related to magazine exposure (wave 2), $\beta = .052, SE = .015, p < .05$ and $\beta = .070, SE = .006, p = .001$, respectively.

Differences according to age. The sample was divided into two groups: younger than 12 years ($N = 700, M_{age} = 10.761, SD = .430$) and older than 12 years ($N = 891, M_{age} = 12.438, SD = .579$). Preliminary analyses (MANOVA) showed that both groups differed on the key variables, $V = .044, F(8, 1580) = 9.120, p = .000, \eta^2 = .044$. Results are summed up in Table 2. Hypothesis 4 postulated that age would moderate the examined paths and was tested through a multiple group analysis. The model achieved a good fit in both groups with a chi-square value of 5891.257 with 2514 degrees of freedom, $p < .001, RMSEA = .029, CFI = .924, \chi^2/df = 2.343$. First, it was made sure that there was measurement invariance, indicating that the meaning of the latent variables was the same in both groups. Second, to test whether both groups differed on the hypothesized relations, we compared the unconstrained model (i.e., model where the parameters were allowed to vary between the

groups) with the constrained model (i.e., model where the parameters were constrained to be equal across the groups). According to the chi-square difference test, the hypothesized relations differed significantly between younger and older respondents ($\Delta\chi^2(31) = 72.292, p = .000$). A path-by-path analysis (Figures 2 and 3) revealed that the stability of the construct internalization of appearance ideals was significantly stronger among older respondents ($\beta = .442, SE = .045, p < .001$ and $\beta = .220, SE = .048, p < .001$). Moreover, the attribution of social rewards to attractiveness (wave 1) was significantly related to internalization (wave 2) among younger respondents ($\beta = .244, SE = .025, p < .001$), but not among older respondents ($\beta = .070, SE = .025, p = .080$). However, we believe that this finding might be due to the control variables. Specifically, as older respondents used Facebook more often ($M = 4.048; SD = 2.511$) and searched for online appearance-related information more frequently ($M = 1.305; SD = .959$) than younger respondents ($M = 2.477; SD = 2.243$ and $M = 1.213; SD = .806$, respectively), $F(2, 1499) = 79.410, p < .001$, these variables might have explained more variance in the internalization of appearance ideals (wave 2). Therefore, the model was tested again without these control variables. Similar results were found: the model showed a good fit with a chi-square value of 5371.082 with 2256 degrees of freedom, $p < .001$, RMSEA = .029, CFI = .928, $\chi^2/df = 2.381$. And, the hypothesized relations differed significantly between younger and older respondents ($\Delta\chi^2(16) = 36.800, p < .01$). Older and younger respondents did still differ on the relation between the attribution of social rewards to attractiveness (wave 1) and internalization (wave 2), but only in magnitude as $\beta_{older} = .086, SE = .026, p = .035$ and $\beta_{younger} = .255, SE = .025, p < .001$. And the stability of the construct internalization was still stronger among older respondents ($\beta = .484, SE = .046, p < .001$ and $\beta = .265, SE = .050, p < .001$).

In both models (including and excluding Facebook use and searching online appearance-related information), the internalization of appearance ideals (wave 2) was not significantly

related to social appearance anxiety (wave 2), $\beta = .031$, $SE = .041$, $p = .354$, among the younger respondents. This relation was, however, significant among older respondents, $\beta = .103$, $SE = .030$, $p < .001$. Nevertheless, this difference was not statistically significant according to the chi-square difference test, $\Delta\chi^2(1) = 1.933$, $p = .164$ (results reported are those from the model excluding Facebook use and searching online appearance-related information). These findings do not fully support Hypothesis 4.

[TABLE 2 ABOUT HERE]

[FIGURES 2 AND 3 ABOUT HERE]

Differences according to gender. Preliminary analyses showed that boys and girls differed with regard to the key variables, $V = .116$, $F(8, 1580) = 25.796$, $p = .000$, $np^2 = .116$. Results are summed up in Table 2. To test hypothesis 5, which postulates that gender would moderate the examined paths, a multiple group analysis was performed. The model achieved a good fit with a chi-square value of 5999.241 with 2598 degrees of freedom, $p < .001$, RMSEA = .029, CFI = .924; $\chi^2/df = 2.307$. The results indicated that boys and girls did not significantly differ on the latent variables in the model (i.e., measurement invariance). The groups could therefore be compared. These results showed that the models did not significantly differ from each other, indicating that the processes did not differ for boys and girls. However, the model explained more variance of social appearance anxiety at wave 2 among girls ($R^2 = .611$ for boys, $R^2 = .709$ for girls). These findings supported Hypothesis 5.

Discussion

The current study aimed to increase scholarly understanding of the longitudinal association between magazine exposure and social appearance anxiety among early adolescents. It was explored whether attributing social rewards to attractiveness and internalizing appearance ideals could both be related to magazine exposure and form a reciprocal, mutually influencing process leading to more social appearance anxiety. Overall,

the hypotheses were supported and provide some new insights for the literature.

Magazines and Social Appearance Anxiety

First, the current study expands prior experimental research on the effects of media exposure on social appearance anxiety among young women (e.g., Harper & Tiggemann, 2007; Monro & Huon, 2005), by investigating the longitudinal influence of magazine exposure on early adolescents' social appearance anxiety. This study is among the first to pay specific attention to this age group and shows that 9 to 14 year-olds are already at risk of developing social appearance anxiety when they frequently read magazines. In particular, the zero-order correlations showed that time spent reading magazines at time 1 was significantly related to social appearance anxiety at time 2. This finding is in line with studies indicating that the media set an unrealistic appearance standard (e.g., Buote, Wilson, Strahan, Gazzola, & Papps, 2011; Labre, 2005) and that exposure to such media messages is associated with negative feelings about the body (i.e., body dissatisfaction) as a result of the perceived failure to meet the ideal standard (e.g., Clark & Tiggemann, 2007). Experiencing a discrepancy between the actual and ideal physical attributes is often considered a predictor of social appearance anxiety as well (Hart et al., 2008). The current findings among early adolescents are especially important in light of prior studies indicating that young women who fear negative evaluations engage in binge eating behaviors to counteract those feelings (Levinson & Rodebaugh, 2011). For prevention purposes, research on the behavioral consequences of experiencing social appearance anxiety among early adolescents is, therefore, warranted.

The Role of (Consequences of) Complying to Appearance Norms

Second, an important aim of this study was to better understand how magazine exposure influences social appearance anxiety over time. To that end, the internalization of appearance ideals and the attribution of social rewards to attractiveness were examined as (serial) mediators in the studied relationship. In line with social cognitive theory (Bandura, 2001),

our findings show that early adolescents are inclined to internalize appearance ideals if they perceive certain (social) rewards for complying with the ideals. In fact, the current study corroborates scholars' (Engeln-Maddox, 2006; Harrison, 2000) assumption that frequent exposure to appearance-related media messages, including magazines, reinforces the association between appearance and social rewards (e.g., Evans, 2003), which motivates early adolescents to internalize appearance ideals and increases their anxiety for situations in which they believe others judge them because of their appearance. The current findings thus empirically confirm Thompson and Stice's (2001) theoretical assumption that the media's reinforcement of appearance ideals (i.e., by associating attractiveness with social rewards) perpetuates these ideals by creating certain expectations about the benefits of fitting the ideal mold. Considering internalization in terms of the benefits that are associated with appearance ideals might, then, be a promising avenue for future research to better understand why early adolescents feel pressured to meet those ideals.

The reverse relationship with the internalization of appearance ideals as a predictor of the attribution of social rewards to attractiveness was examined as well. In line with prior studies (Thompson et al., 1999), we first showed that magazine exposure affected early adolescents' internalization of appearance ideals. Once individuals cognitively buy into appearance ideals (i.e., internalize the ideals), appearance becomes a guiding principle in their beliefs about others as well as in self-evaluations (Cash, 2005). In line with this conceptualization of internalization, our study was the first to show that once early adolescents have internalized appearance ideals, they believe that attractiveness is a prerequisite to social acceptance among peers. Early adolescents who have internalized appearance ideals come to highly value appearance, and might misperceive the attitudes of others (such as "attractiveness is important") as more similar to their own. By erroneously overestimating the importance others attach to appearance, they might come to believe they should comply with the

prevailing appearance ideals in order to obtain social rewards (Prinstein & Wang, 2005).

When adolescents feel they are unable to achieve the standard, anxiety might be induced (Veale et al., 2003). Becoming anxious for situations in which negative evaluations of one's appearance might occur, can thus be considered a self-implication of believing that being more attractive would lead to more peer acceptance.

Together, we revealed a mutually reinforcing process involving the internalization of appearance ideals and the perception that attractiveness is valued by peers. The current findings confirm prior research that once appearance ideals are internalized, early adolescents are inclined to associate positive things to such ideals (e.g., Erchull, 2015). Additionally, our study empirically confirms Engeln-Maddox' (2006) nuancing of the internalization of appearance ideals; early adolescents do not just internalize appearance ideals, they internalize the reactions to conformity to those ideals, such as peer acceptance. Our findings show that the internalization of appearance ideals was both a consequence as a predictor of the perception that attractiveness is rewarded. However, it should be noted that although prior studies have considered the internalization of appearance ideals as an important risk factor for body image disturbances, the current findings put the role of the internalization of appearance ideals into perspective. More specifically, the internalization of appearance ideals was a weaker predictor of social appearance anxiety than the attribution of social rewards to attractiveness. Although the internalization of appearance ideals and the attribution of social rewards to attractiveness formed a reinforcing spiral leading to more social appearance anxiety among early adolescents, we argue that future studies should bear in mind that early adolescents' social appearance anxiety is not merely explained by the extent to which they internalize appearance ideals they encounter in the media, but rather the extent to which they internalize the consequences of complying with those ideals.

Moderating factors

Third, an additional analysis was performed to test the proposed hypothesized model among respondents younger than 12 years and respondents older than 12 years. The results did not provide a clear-cut answer on whether older respondents would be more influenced (hypothesis 4). Specifically, both 9-to 11-year-olds and 12-to 14-year-olds were influenced by magazine exposure with regard to their internalization of appearance ideals and attribution of social rewards to attractiveness. However, only among younger respondents were both cross-lagged associations supported. More specifically, the attribution of social rewards was not significantly related to the internalization of appearance ideals among the older respondents. This finding might have had a statistical cause; the internalization of appearance ideals might have been more explained by the other variables in the model (the internalization of appearance ideals at wave 1, magazine exposure, Facebook use, and online appearance-related internet search). Furthermore, the older respondents in our sample did score higher on all key variables in the model, thereby confirming prior studies that the many (biological) changes 12- to 14-year olds go through make sociocultural standards of an ideal appearance more salient, increase their likelihood of internalizing these ideals as personal standards, and make them more vulnerable to a negative body image (Anschutz et al., 2011; Cotrufo, Cella, Cremato, & Labella, 2007). Additionally, among the younger sample, social appearance anxiety was only statistically significantly predicted by the social rewards and not the internalization of appearance ideals. Our findings did confirm those of Oliver and Thelen (1996) who showed that the perception that peers would like them more if they were more attractive was a strong predictor of social appearance anxiety among 9 to 11 year old boys and girls. Nevertheless, more research is needed to increase our understanding of how age might moderate the influence of media exposure on body image concerns.

Lastly, our findings indicate that the hypothesized model was an adequate representation

of the processes for both boys and girls. After being exposed to appearance-focused magazines, boys and girls are inclined to internalize ideals, attribute social benefits to attractiveness, and become anxious for situations in which they believe they are being judged because of their appearance. Although there were no statistically significant differences in the examined relations, the model better explained social appearance anxiety for girls. Girls read appearance-focused magazines more often than boys, which makes sense considering that such magazines are more often directed towards girls and women (Willis & Knobloch-Westerwick, 2014). Moreover, in line with prior research suggesting that girls are more concerned with their appearance and more aware of appearance ideals (e.g., Phares et al., 2004), girls in our study were also more likely to experience social appearance anxiety.

Implications for Intervention

The current findings could be of considerable relevance to intervention practitioners. Our results show that the attribution of social rewards to attractiveness plays a pivotal role in explaining both the internalization of appearance ideals and the development of social appearance anxiety. We therefore suggest that intervention initiatives should pay specific attention to the social context of appearance (ideals) by, for instance, organizing group-based activities. Such activities encourage individuals to work together and foster better peer relationships. As prior research has indicated that such peer relationships become increasingly important during adolescence and have been shown to positively affect adolescents' development (Parker, Rubin, Erath, Wojslawowicz, & Buskirk, 2006), intervention initiatives should promote healthier peer connections. In addition, such group-based activities have been shown to be effective in reducing perceived peer rejection (Jelalian, Sato, & Hart, 2011).

In all, it seems important to reduce the perceived importance of appearance and intervention programs might benefit from applying the same strategy as prevention programs

designed to reduce levels of self-objectification (e.g., Kroon Van Diest & Perez, 2013). Self-objectification entails the prioritizing of appearance-related attributes over other attributes such as health and personality (Morry & Staska, 2001). Given that early adolescents believe that peer acceptance is conditional on their appearance, it is important to teach youth that their acceptance among peers comprises more aspects than only their appearance.

Furthermore, our results show that social appearance anxiety can be considered a self-implication of believing that others consider attractiveness a prerequisite to accepting others in their social group. Therefore, it seems warranted to teach youth about individuals' tendency to misperceive others' behaviors and attitudes. Such exercises have been proved to be successful at altering adolescents' own behavior and attitudes (Schroeder & Prentice, 1998). Lastly, programs should continue to pay attention to media literacy and teach both boys and girls that media's portrayal of appearance ideals and, more importantly, the consequences of complying with those ideals are unrealistic.

Limitations

The findings of the current study should be interpreted in light of some limitations. First, we did not take into account more proximate peer-related influences. Prior research has indicated that teasing during childhood is related to anxiety disorders later in life (e.g., McCabe, Miller, Laugesen, Antony, & Young, 2010). Appearance teasing has also been related to body dissatisfaction (Lunde, Frisén, & Hwang, 2006) and appearance-based rejection sensitivity (Webb, Zimmer-Gembeck, & Donovan, 2014) among adolescent samples. Although the belief that attractiveness (or thinness) is related to likeability has been shown to be a better predictor of appearance concerns among children than peer interactions (e.g., Oliver & Thelen, 1996), an interesting avenue for future research would be to include appearance teasing in the examined model. Second, the current study did not take into account personality traits such as reward sensitivity. Reward sensitivity peaks during

adolescence (Van Leijenhorst et al., 2010), and those high in reward sensitivity are theorized to be more prone to pursuing rewards (Gray, 1970). The relationships tested in the current study might thus differ among early adolescents scoring high versus low on reward sensitivity measures. Third, the fear of negative outcomes for not complying to the ideal standards of appearance might be more relevant than missing out on positive outcomes (e.g., popularity) in understanding social appearance anxiety among early adolescents. Future studies are needed to examine more in-depth whether the threat of being punished would better explain one's anxiety for negative evaluations of their appearance than the loss of positive outcomes. In addition, an interesting avenue for future studies would be to also include a measure on visual social media (e.g., Instagram or Facebook use). The prevalence of appearance ideals in magazines (Tiggemann & Polivy, 2009) and the goal-oriented use of magazines (i.e., to obtain appearance-related information) render magazines an especially relevant medium in body image research. Notably, our findings corroborate the latter by showing that magazine exposure remains a significant predictor of body image outcomes while controlling for respondents' Facebook use and online search for appearance-related information. Nevertheless, social media are popular among youth and convey idealized imagery as well (Kim & Chock, 2015). Moreover, the idealized images on social media are of peers, whose appearances seem more personally attainable, which likely enhances negative effects (Fardouly, Diedrichs, Vartanian, & Halliwell, 2015). The current study may thus provide a stepping stone to future studies including elaborate measures on exposure to idealized imagery in both traditional and social media in investigating early adolescents' social appearance anxiety. Lastly, by using four-wave panel data the temporal order of the proposed relationships might have been more rigorously tested.

In conclusion, the present study showed that frequent readers of magazines were more likely to fear situations in which their appearance might be negatively evaluated, six months

later. In line with Engeln-Maddox (2006), we have put the role of the internalization of appearance ideals into perspective and conclude that early adolescents not just internalize appearance ideals but rather the consequences of complying to those ideals (i.e., popularity). The key contribution of this work is in showing that early adolescents infer the association between attractiveness and rewards from the media, which increases their risk of becoming fearful for negative evaluations of their appearance.

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MAGAZINES AND SOCIAL APPEARANCE ANXIETY

Table 1

Descriptive statistics and zero-order correlations (N = 1,591)

	1	2	3	4	5	6	7
1. Magazine exposure wave 1	1	.281**	.184**	.211**	.146**	.199**	.164**
2. Internalization wave 1		1	.418**	.423**	.357**	.370**	.305**
3. Peer appearance based acceptance wave 1			1	.310**	.577**	.605**	.454**
4. Internalization wave 2				1	.456**	.303**	.434**
5. Peer appearance based acceptance wave 2					1	.446**	.666**
6. Social appearance anxiety wave 1						1	.623**
7. Social appearance anxiety wave 2							1
<i>M (SD)</i>	1.728 (.643)	1.781 (.807)	2.700 (1.411)	1.818 (.855)	2.603 (1.433)	2.164 (.714)	2.119 (.774)
Range	1-5	1-5	1-7	1-5	1-7	1-5	1-5

Note. * $p < .05$, ** $p < .01$; Wave 1 = September-October 2014 ; Wave 2 = March-April 2015

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Table 2

Gender and age differences in the means and standard deviations for the key variables.

	Boys		Girls			< 12 years old		> 12 years old		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>np²</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>np²</i>
Magazine exposure	1.667 ^a	.622	1.780 ^b	.652	.009	1.618 ^a	.596	1.806 ^b	.660	.021
Internalization wave 1	1.775 ^a	.768	1.787 ^a	.832	.000	1.687 ^a	.764	1.855 ^b	.820	.010
Peer appearance based acceptance wave 1	2.799 ^a	1.400	2.594 ^b	1.409	.005	2.586 ^a	1.421	2.786 ^b	1.391	.003
Internalization wave 2	1.767 ^a	.791	1.868 ^b	.899	.006	1.686 ^a	.776	1.920 ^b	.886	.017
Peer appearance based acceptance wave 2	2.609 ^a	1.356	2.585 ^a	1.469	.000	2.403 ^a	1.386	2.750 ^b	1.441	.017
Social appearance anxiety wave 1	2.203 ^a	.698	2.459 ^b	.813	.031	2.272 ^a	.779	2.374 ^b	.755	.003
Social appearance anxiety wave 2	1.986 ^a	.713	2.235 ^b	.798	.030	2.001 ^a	.750	2.194 ^b	.768	.015

Note. Means with different superscripts within a row are significantly different at $p < .05$ across gender or age. Wave 1 = September-October 2014 ; Wave 2 = March-April 2015

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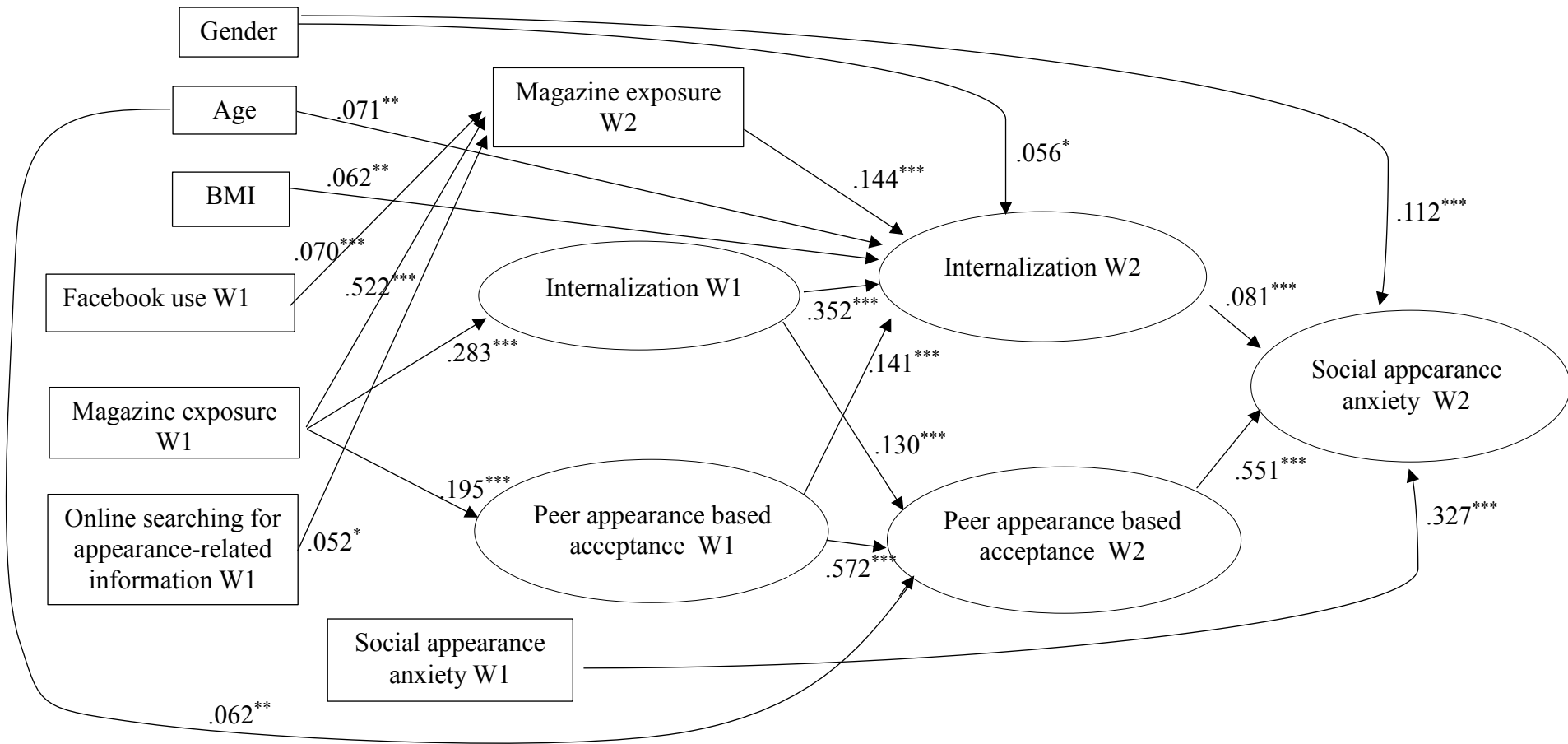


Figure 1: Structural equation model for the relationships between magazine exposure, the internalization of appearance ideals, the perception that attractiveness leads to social acceptance, and social appearance anxiety ($N = 1,591$).

Note. W1 = September-October 2014 ; W2 = March-April 2015. Only significant paths are shown (* $p < .05$, ** $p < .01$, *** $p < .001$). Values reflect standardized coefficients (beta).

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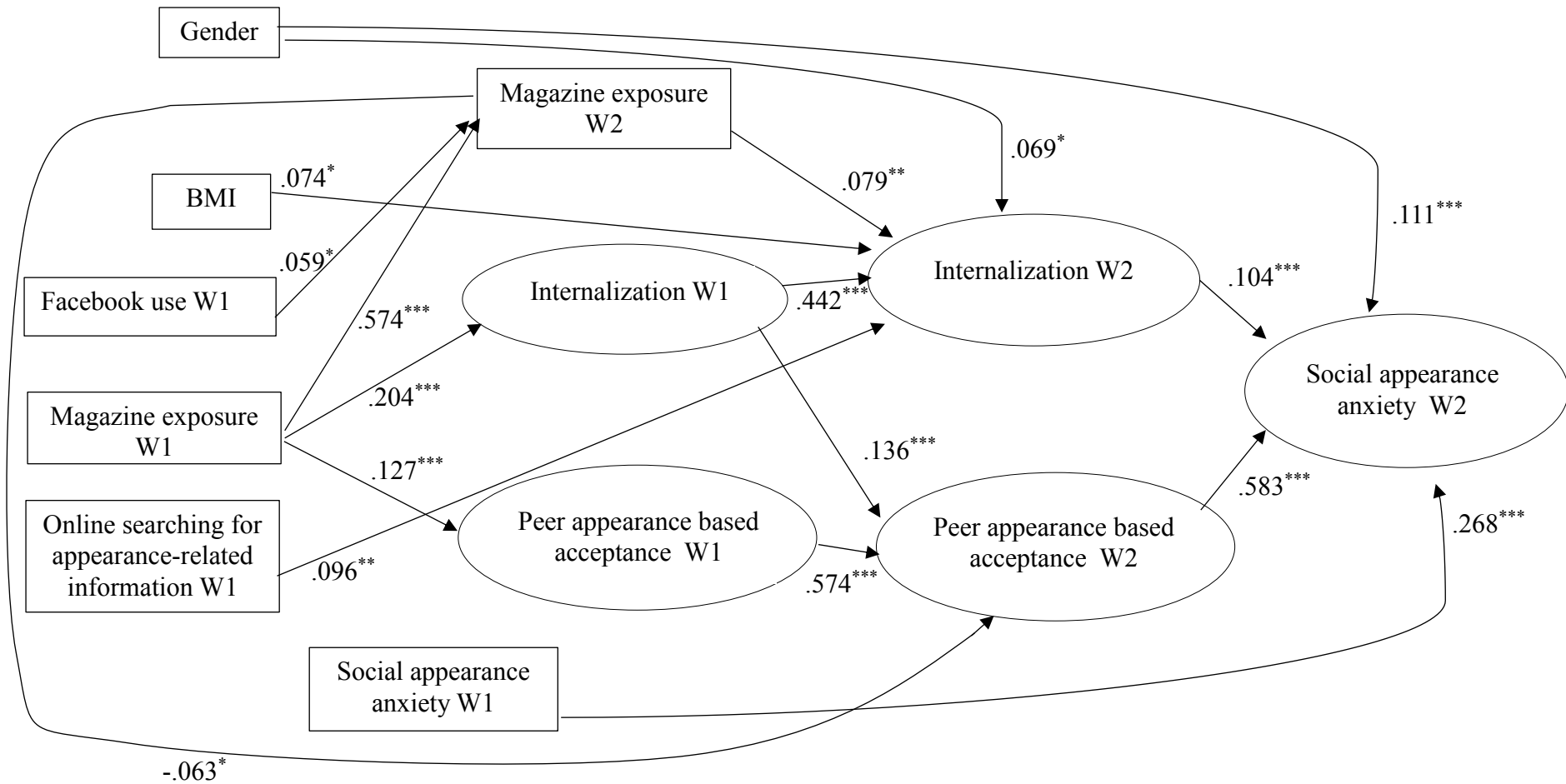


Figure 2: Structural equation model among older respondents (Range age = 12-14 years; $N = 891$).

Note. W1 = September-October 2014 ; W2 = March-April 2015. Only significant paths are shown ($^*p < .05$, $^{**}p < .01$, $^{***}p < .001$). Values reflect standardized coefficients (beta).

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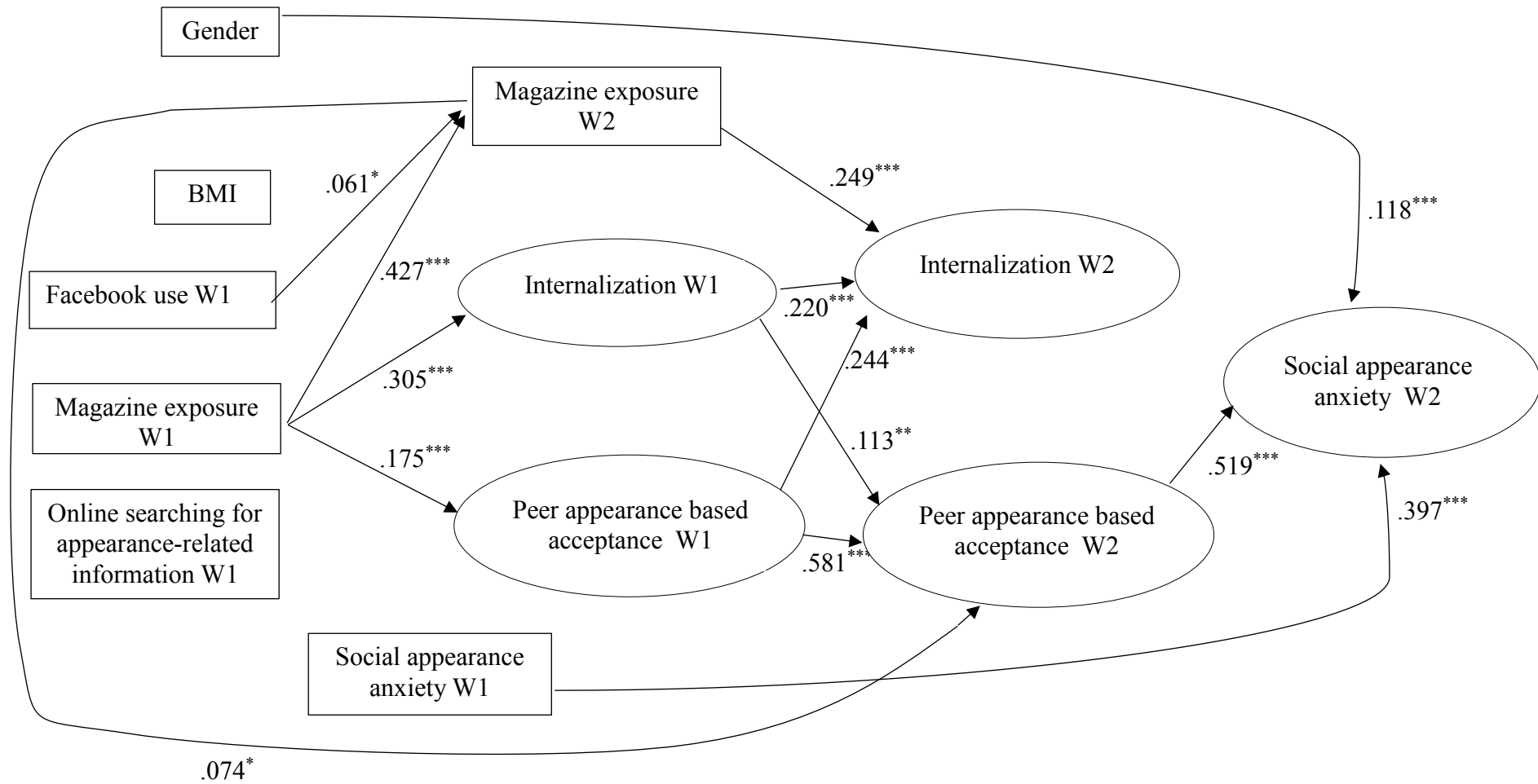


Figure 3: Structural equation model among younger respondents (Range age = 10-11; $N = 700$).

Note. W1 = September-October 2014 ; W2 = March-April 2015. Only significant paths are shown (* $p < .05$, ** $p < .01$, *** $p < .001$). Values reflect standardized coefficients (beta).